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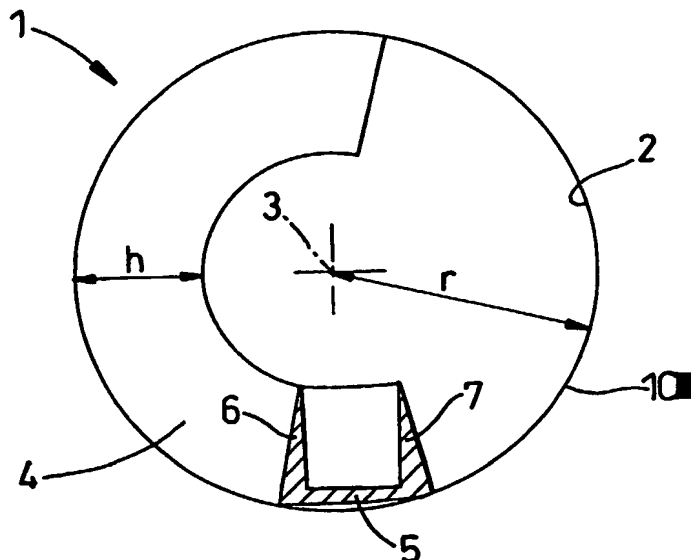
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- (71) Applicant (for all designated States except US): **TAY-SIDE FLOW TECHNOLOGIES LIMITED** [GB/GB]; Unit 20, Prospect Business Centre, Gemini Crescent, Dundee Technology Park, Dundee, Tayside DD2 1TY (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HOUSTON, John, Graeme** [GB/GB]; Bishops House, Fairmount Road, Perth, Tayside PH2 7AW (GB). **HOOD, Robert, Gordon** [GB/GB]; 9 Rosamund Pilcher Avenue, Longforgan, Tayside PH2 9AF (GB). **STONEBRIDGE, Peter, A.** [GB/GB]; 7 Glebe Terrace, Perth, Tayside PH2 7AG (GB).
- (74) Agents: **MCCALLUM, Graeme, David et al.**; Lloyd Wise, McNeight & Lawrence, Highbank House, Exchange Street, Stockport, Cheshire SK3 0ET (GB).
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(54) Title: A HELICAL FORMATION FOR A CONDUIT



(57) Abstract: A helical formation for a conduit (1). The helical formation includes an elongate member (4) defining at least a portion of a helix, the elongate member (4) comprising an inwardly extending portion (6, 7). The inwardly extending portion (6, 7) extends along the length of the elongate member (4) and extends inwardly from the internal side walls of the conduit (1) for a distance equal to between 10 % and 80 % of the distance (r) from the longitudinal axis (3) of the conduit (1) to an internal side wall (2).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 597 472 C (ARTHUR KUHLMANN) 18 January 1936 (1936-01-18)	1-6, 8, 11
Y	the whole document	7, 9, 10, 12-15
X	AT 134 543 B (SCHAUBERGER) 25 August 1933 (1933-08-25)	1, 6-8, 11
A	the whole document	2-5
X	DE 25 10 169 A (ALBERT ZIEGLER KG) 16 September 1976 (1976-09-16)	1, 6, 8
	the whole document	
Y	EP 1 254 645 A (TAYSIDE UNIVERSITY HOSPITALS N) 6 November 2002 (2002-11-06)	7, 9, 10, 12-15
	the whole document	
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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Newman, B

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 2002/179166 A1 (DICK JOHN BRUCE CAMERON ET AL) 5 December 2002 (2002-12-05) page 1, paragraph 2 - page 2, paragraph 28; figure 2	1,6-8, 11-15
P,A	EP 1 314 406 A (TAYSIDE FLOW TECHNOLOGIES LTD) 28 May 2003 (2003-05-28) page 1, paragraph 1 - page 2, paragraph 21; figures 1-8	1,6, 8-10, 13-15
E	WO 03/103540 A (HOUSTON JOHN GRAEME ; TAYSIDE FLOW TECHNOLOGIES LTD (GB); THOMSON ALLA) 18 December 2003 (2003-12-18) the whole document	1,6,8, 11-15
P,A	EP 1 312 321 A (TAYSIDE FLOW TECHNOLOGIES LTD) 21 May 2003 (2003-05-21) the whole document	1,6-8, 11-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
.../GB 03/04917

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 597472	C	18-01-1936	NONE	
AT 134543	B	25-08-1933	NONE	
DE 2510169	A	16-09-1976	DE 2510169 A1	16-09-1976
EP 1254645	A	06-11-2002	EP 1254645 A1	06-11-2002
			AU 3060700 A	31-07-2000
			EP 1139917 A2	10-10-2001
			WO 0038591 A2	06-07-2000
			JP 2002533157 T	08-10-2002
			US 2004037986 A1	26-02-2004
US 2002179166	A1	05-12-2002	GB 2379996 A	26-03-2003
			EP 1269935 A2	02-01-2003
			WO 02098325 A2	12-12-2002
EP 1314406	A	28-05-2003	GB 2382776 A	11-06-2003
			EP 1314406 A2	28-05-2003
			EP 1446073 A1	18-08-2004
			WO 03045279 A1	05-06-2003
			WO 03045280 A1	05-06-2003
			GB 2384189 A	23-07-2003
			US 2003139807 A1	24-07-2003
WO 03103540	A	18-12-2003	WO 03103540 A1	18-12-2003
EP 1312321	A	21-05-2003	GB 2369797 A	12-06-2002
			EP 1312321 A2	21-05-2003
			WO 03045278 A1	05-06-2003
			US 2003120257 A1	26-06-2003